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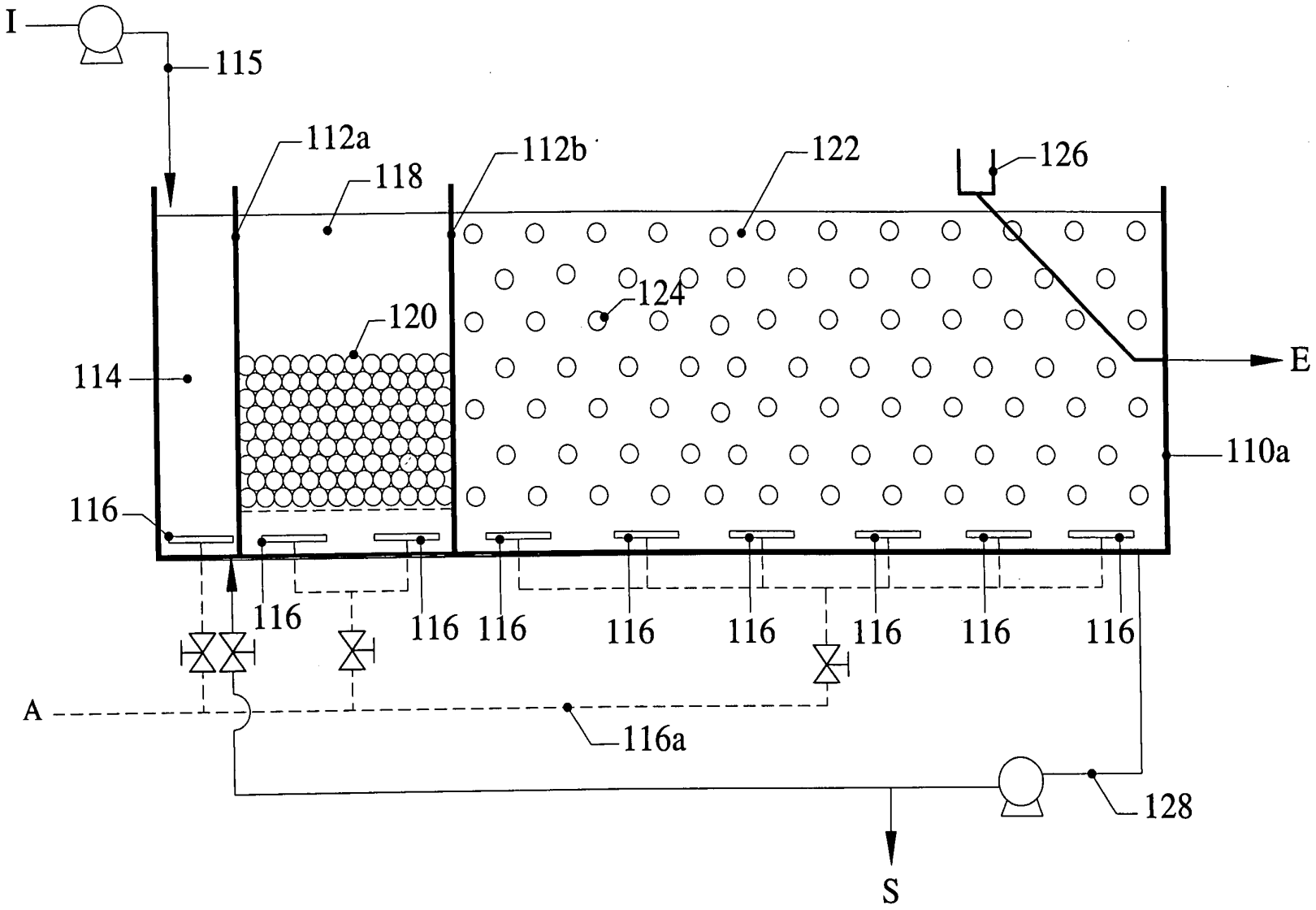
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116
A
116a
128
S

Fig. 1

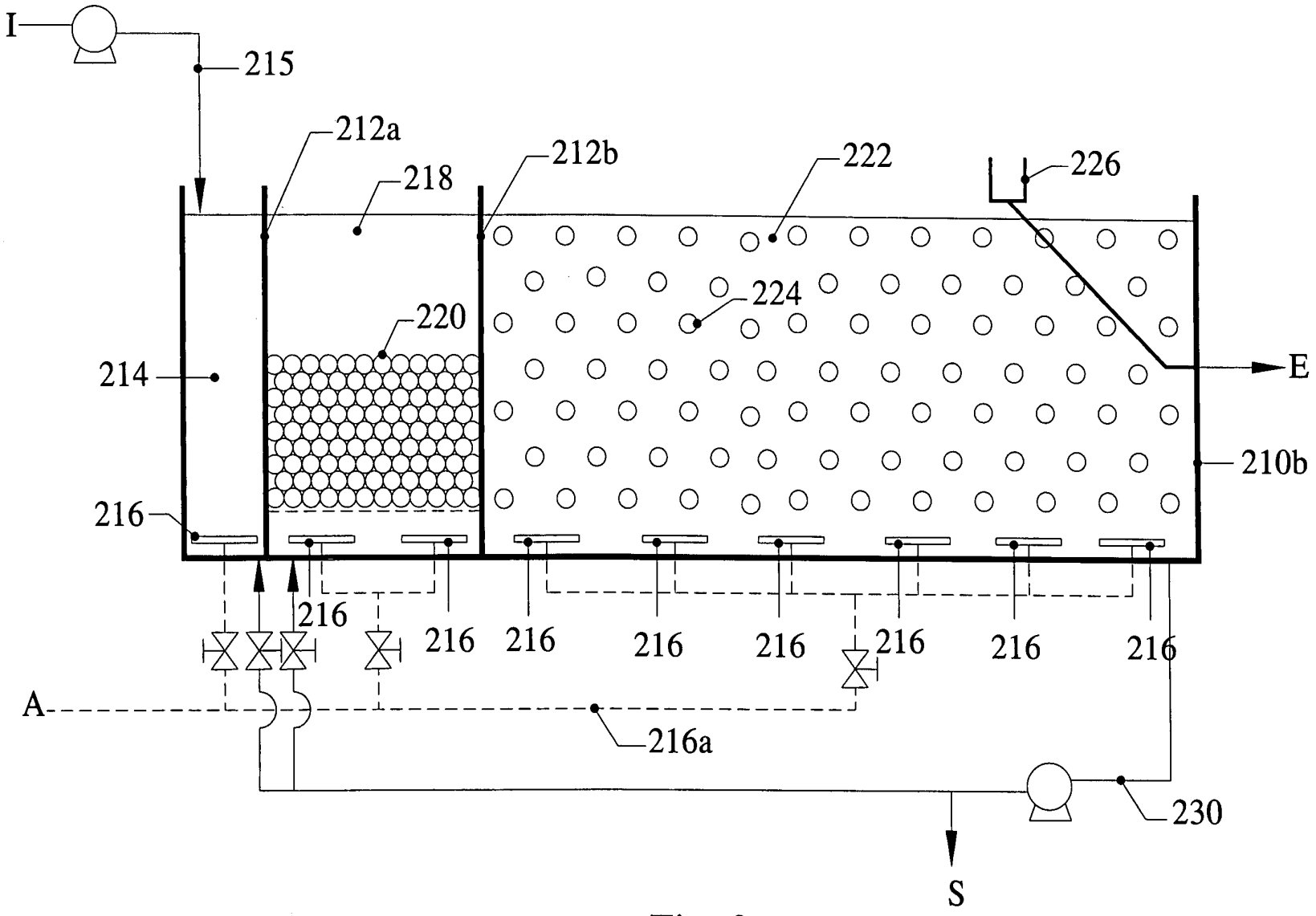
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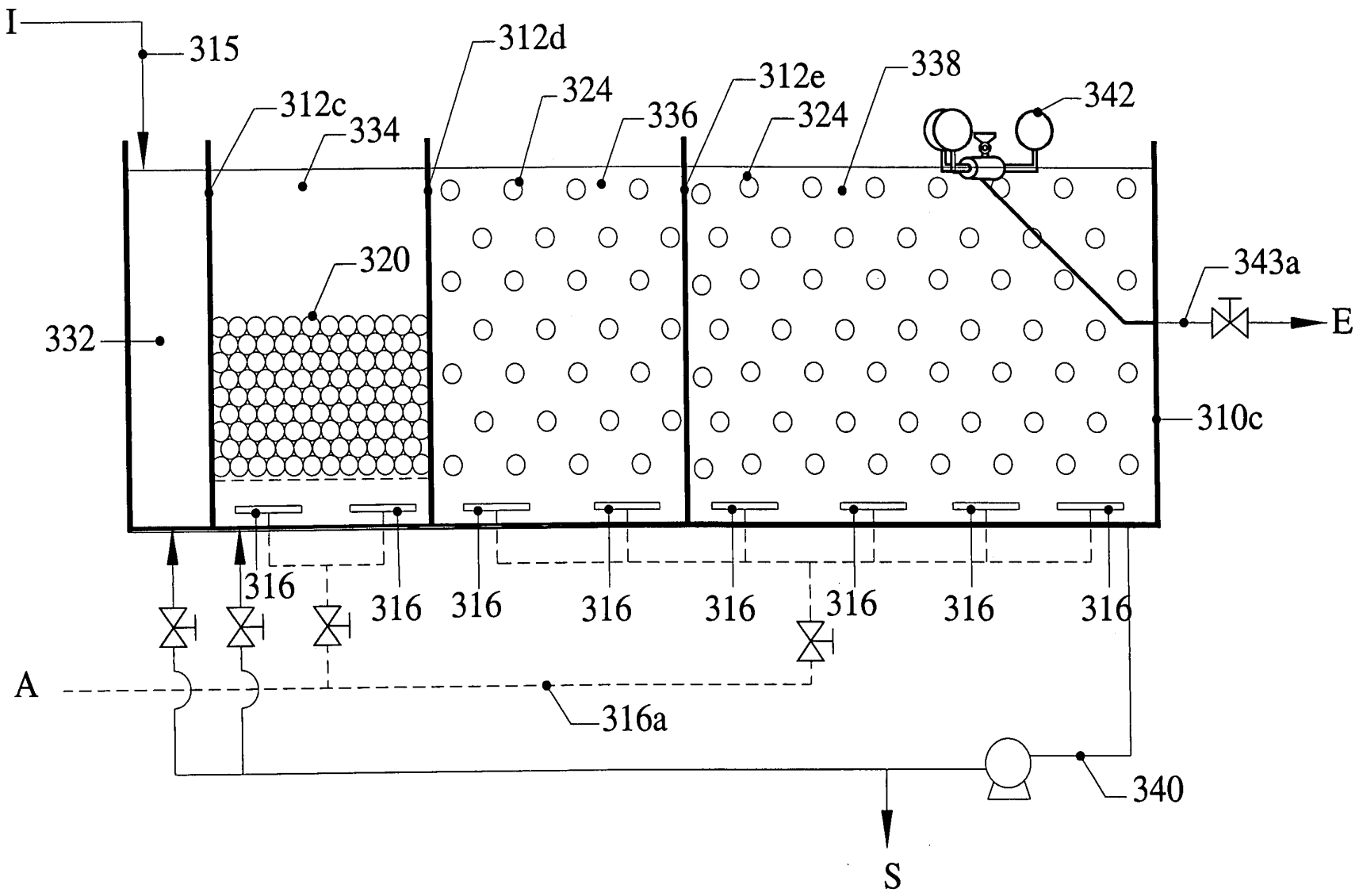
Fig. 2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316
316
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316a
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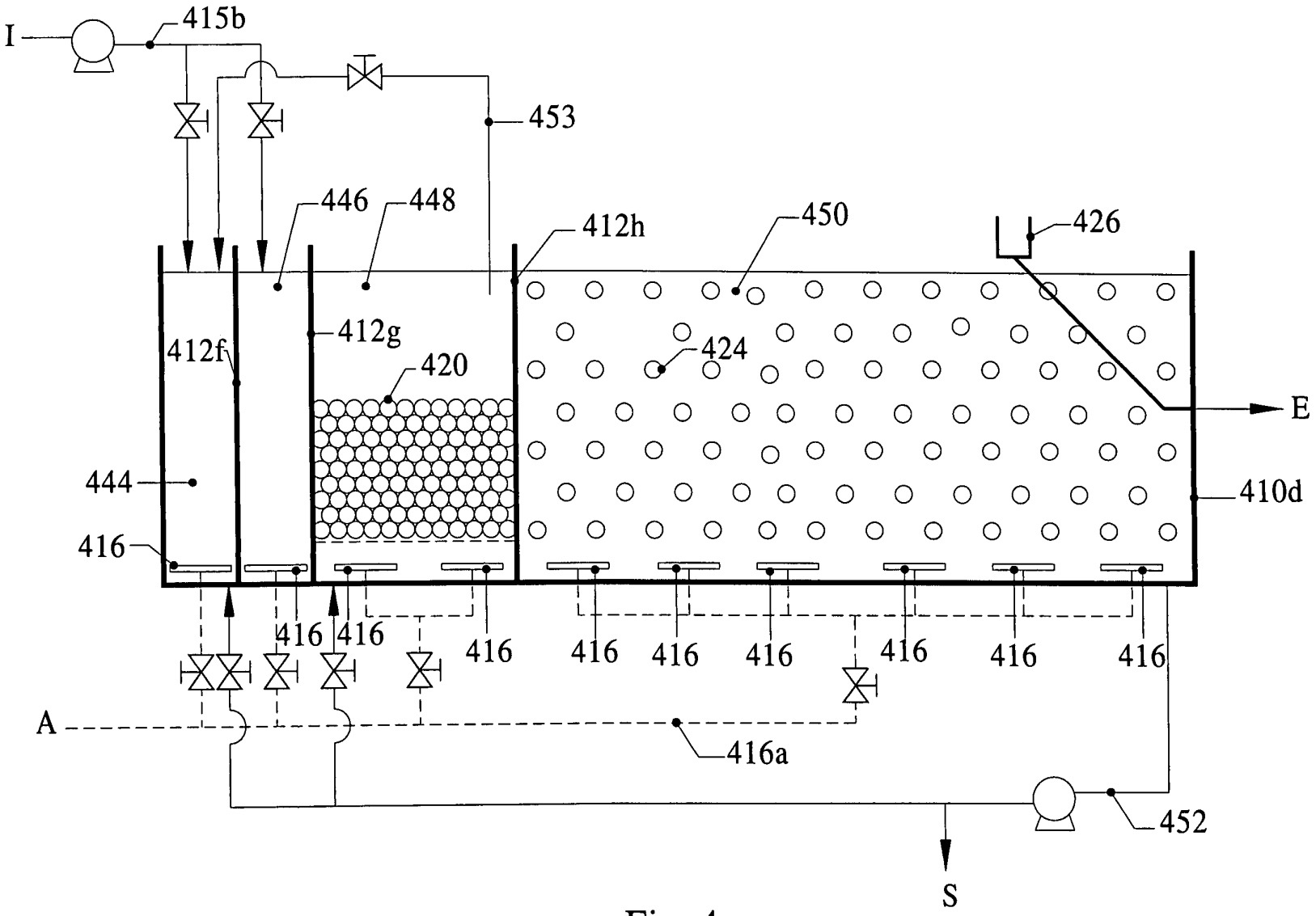
S

Fig. 3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416a
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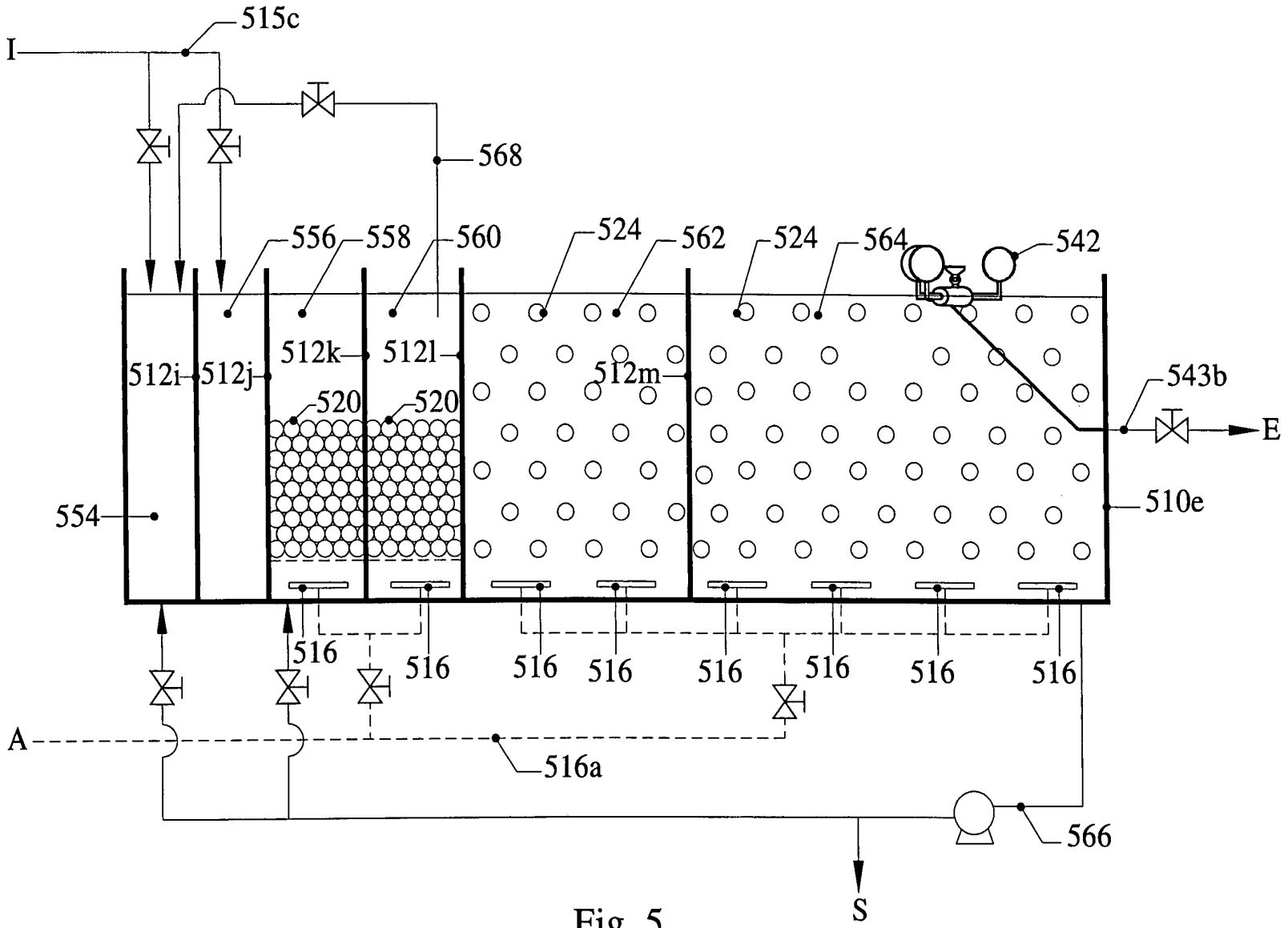
S

Fig. 4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512j
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512l
512m
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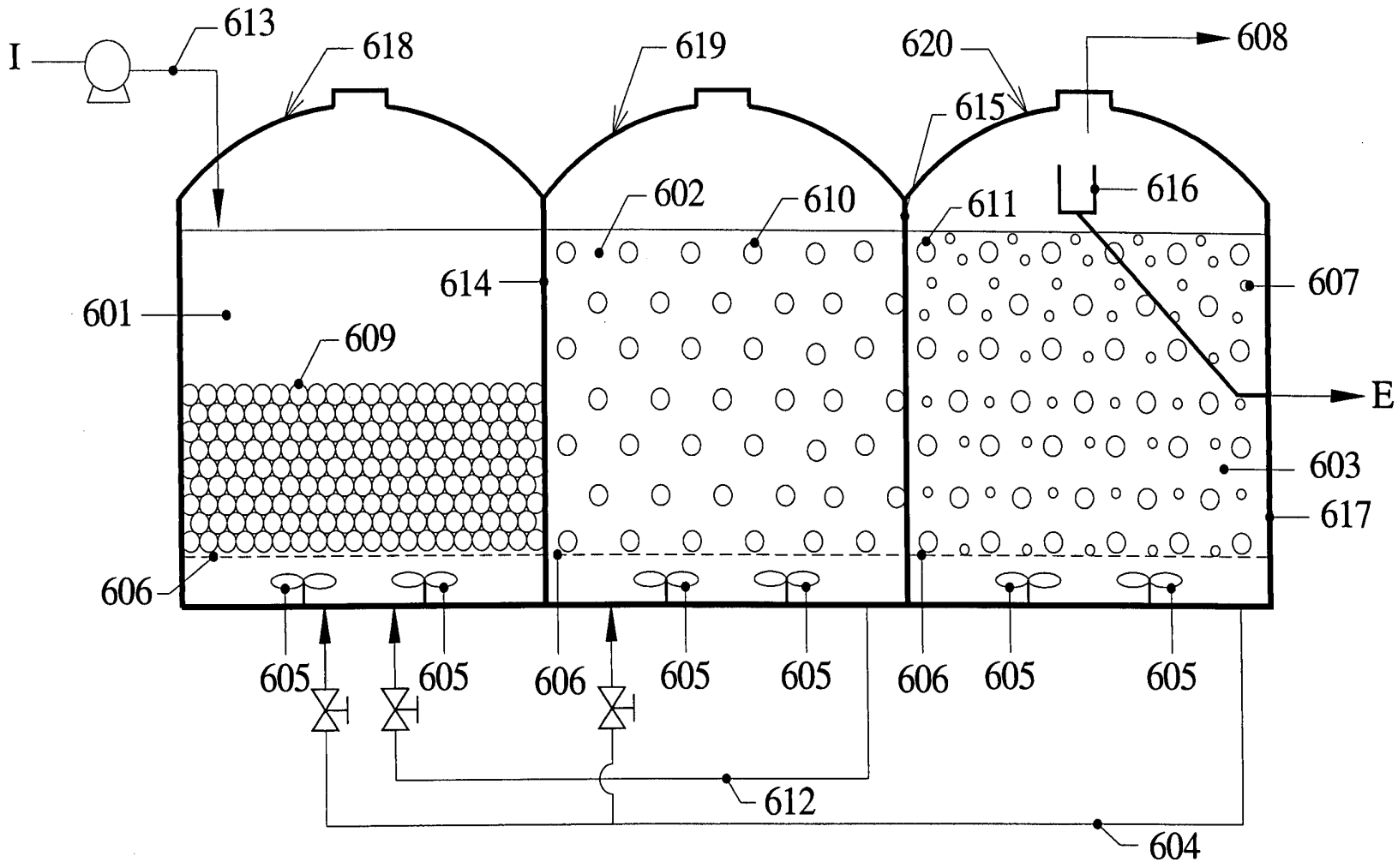
A
516a
566
S

Fig. 5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612
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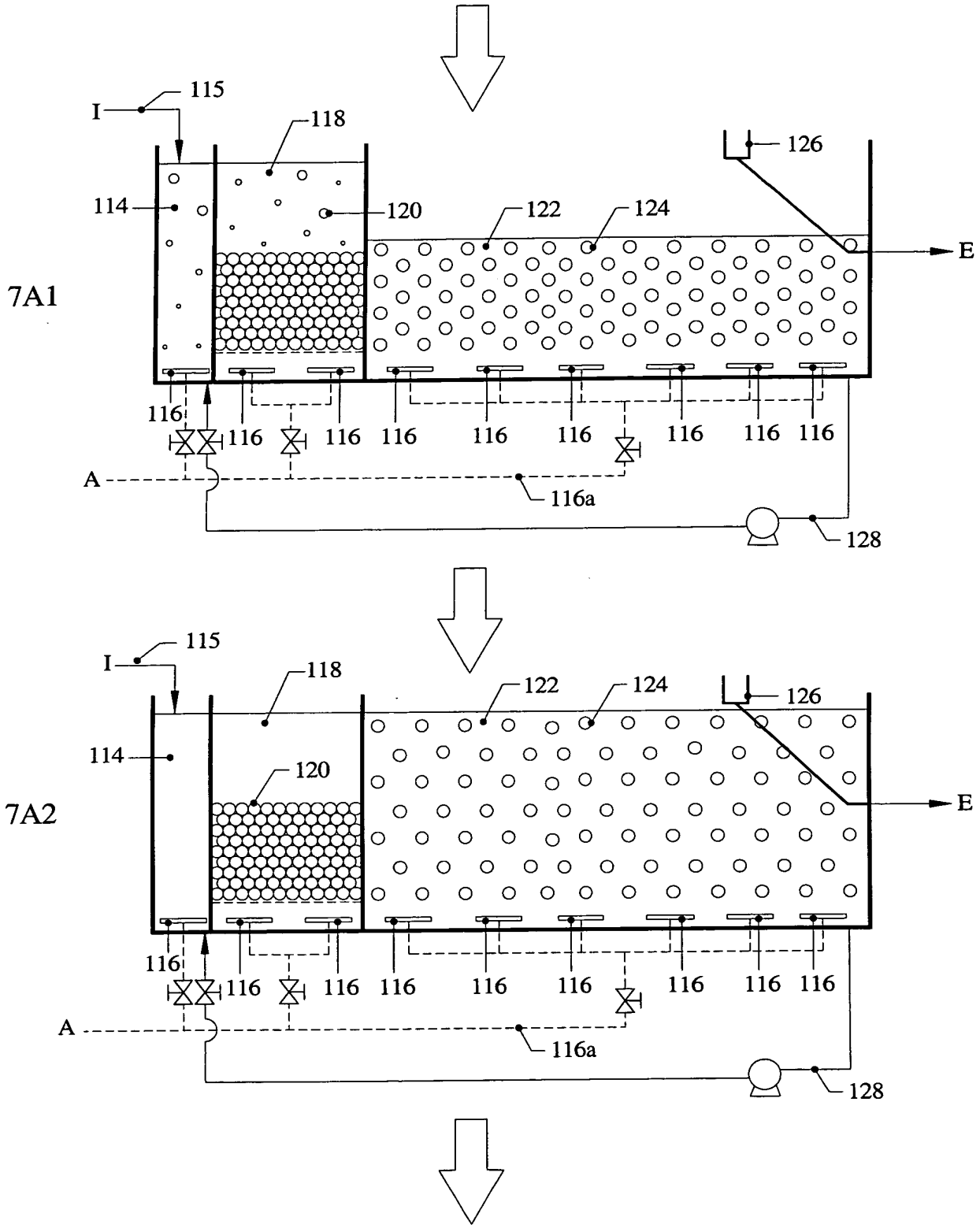
Fig. 6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116a
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118
114
120
122
124
126
E
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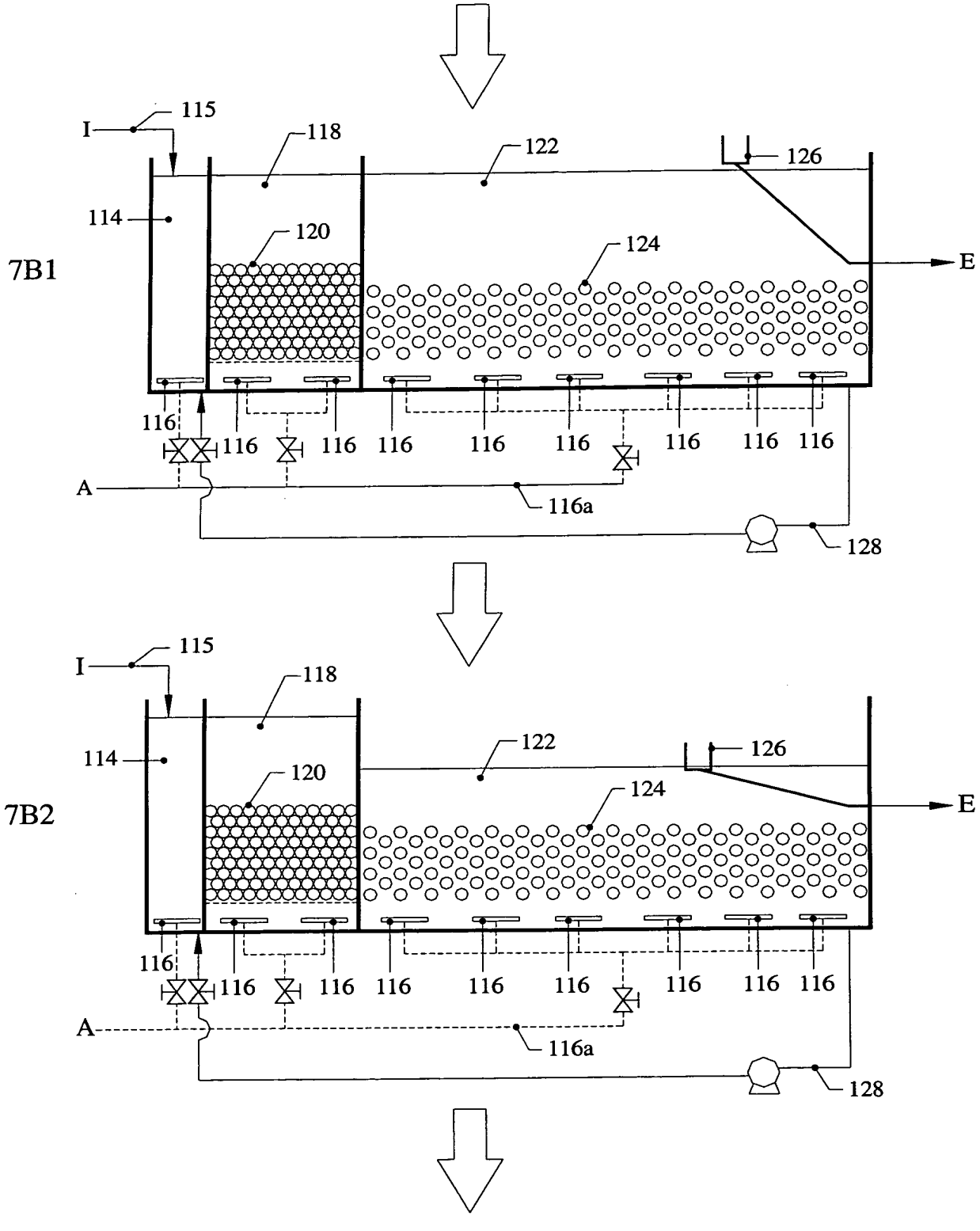
A
116a
128

Fig. 7A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7B2
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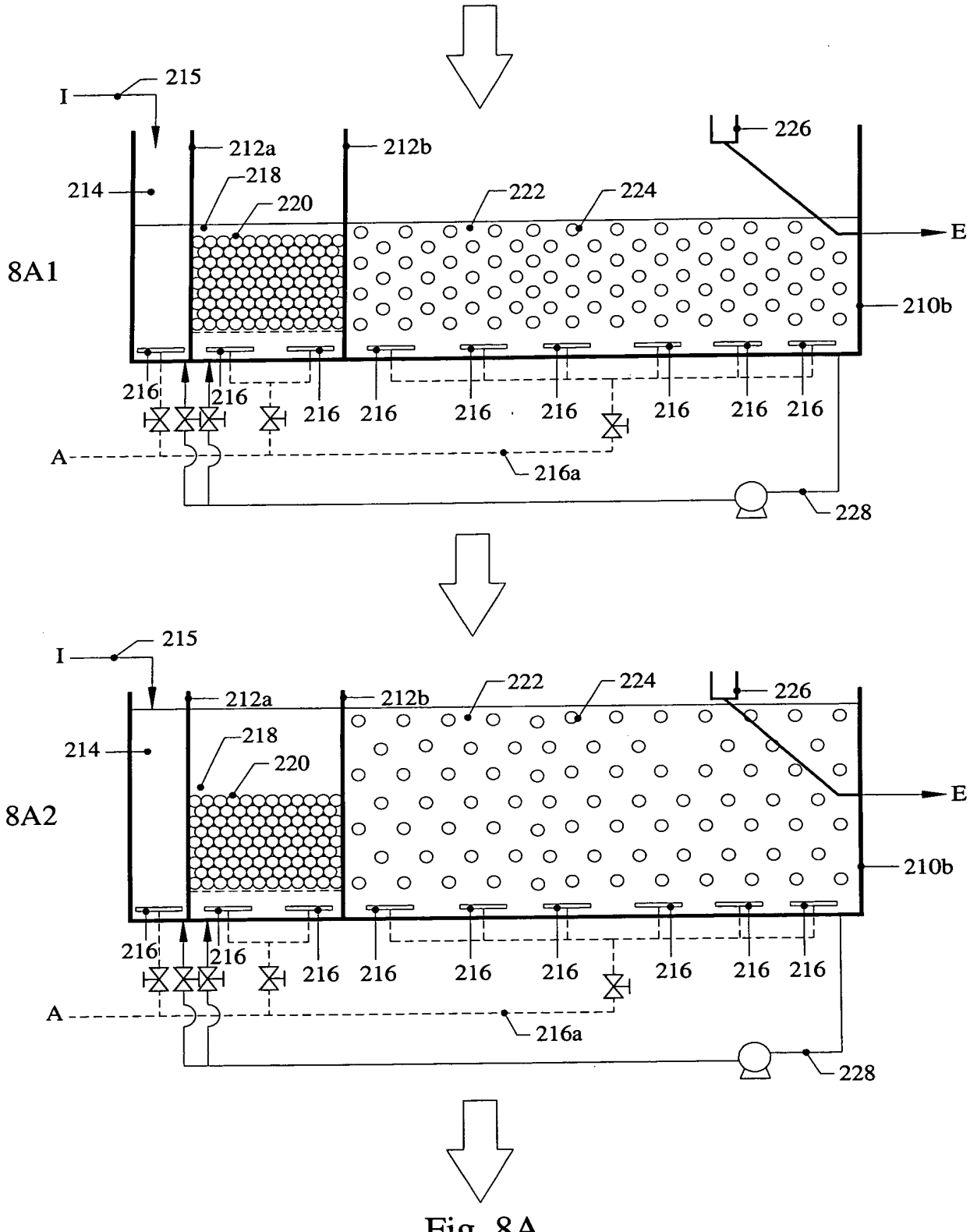
118
122
126
114
120
124
E
116
A
116a
128

Fig. 7B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210b
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216a
A
228
8A2
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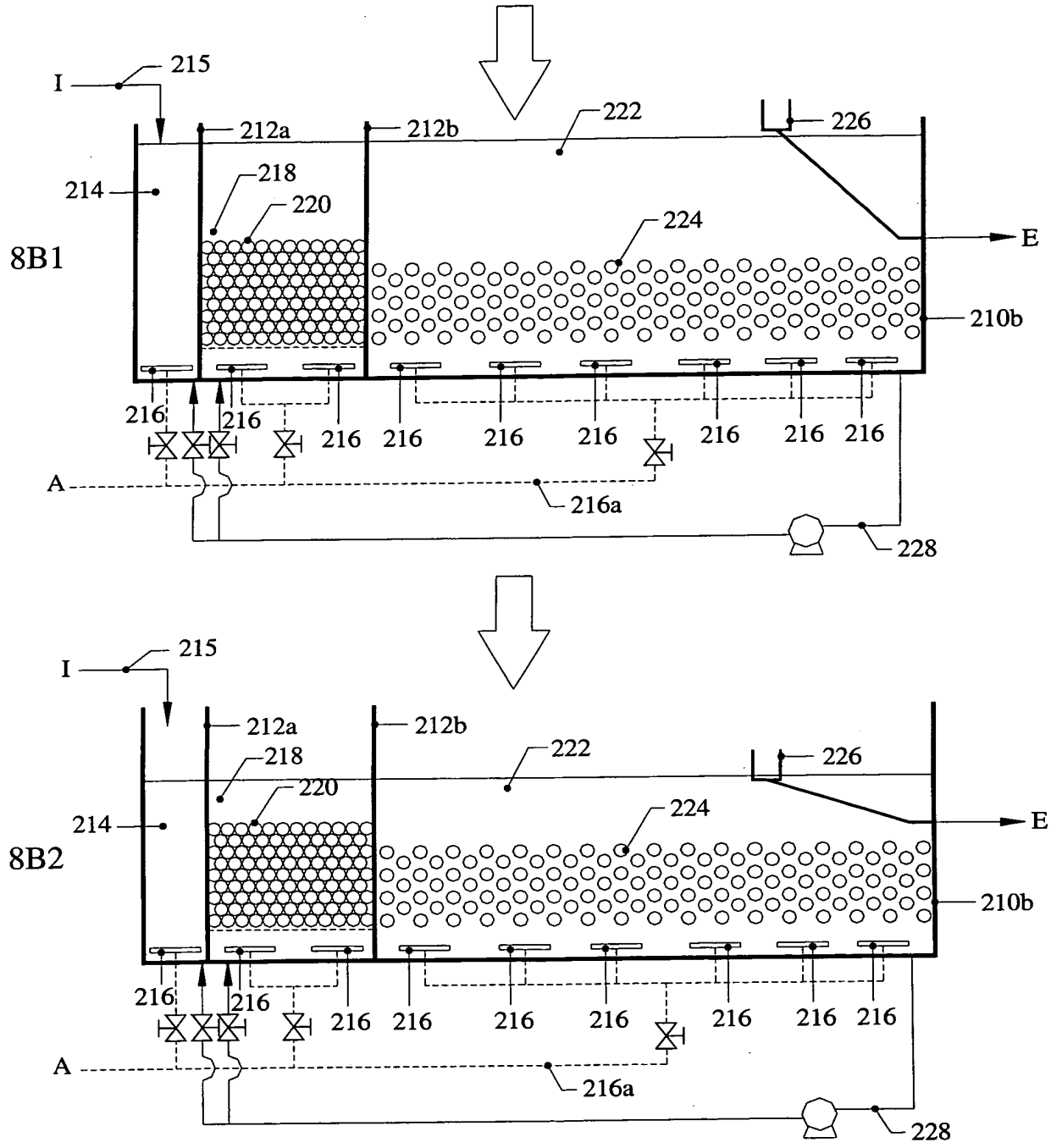
215
212a
212b
214
218
220
222
224
226
E
210b
216
216a
A
228

Fig. 8A


8B1
I
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212a
212b
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E
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A
216a
228
8B2

Fig. 8B

Period	pH	TCOD	SCOD	TSS	VSS	TKN	NH_4-N	TCOD:TKN
1	7.81	389	195	220	142	43	26	9.1
2	7.85	354	176	189	135	41	29	8.6
3	7.76	363	183	212	132	43	30	8.4
4	7.70	338	140	227	146	36	26	9.4
5	7.75	321	156	232	157	37	28	8.7
6	7.71	332	170	243	169	37	24	9.0
7	7.75	436	156	256	178	45	31	9.7
8	7.77	324	148	232	143	39	25	8.3
9	7.86	364	167	228	155	40	27	9.1
10	7.92	341	162	213	135	41	27	8.3
11	7.73	367	226	187	113	42	26	8.7
12	8.02	379	179	233	156	39	28	9.7
13	7.93	385	156	227	149	43	29	9.0
14	7.89	381	174	262	169	41	31	9.3
15	7.75	406	181	253	173	45	30	9.0
16	7.68	382	184	237	156	39	27	9.8
17	7.44	393	172	243	163	38	31	10.3
18	7.77	411	169	261	177	44	28	9.3
19	7.63	379	183	224	136	43	32	8.8
20	7.65	397	167	264	159	42	33	9.5
21	7.83	387	183	244	152	39	29	9.9
22	7.56	372	186	226	141	42	31	8.9
23	7.76	417	178	268	187	41	29	10.2
24	7.79	395	193	237	144	40	29	9.9
25	7.82	364	191	206	125	38	27	9.6

Fig. 8C

Fig. 8D

SBR3										
Phase	Period	TCOD	SCOD	TSS	VSS	TKN	NH_4-N	NO_3-N	MLSS	MLVSS
I	1	95	80	10	7	8.3	4.4	10.2	3430	2400
	2	93	80	9	6	7.9	4.4	9.6	3350	2520
	3	83	72	8	5	6.0	3.7	8.8	3560	2360
	4	78	68	7	5	6.0	3.0	7.2	3450	2480
	5	73	61	8	5	5.5	2.1	4.3	3530	2450
	6	75	61	7	5	5.2	1.5	4.6	3420	2320
	7	72	58	9	6	4.5	1.7	4.6	3680	2540
	8	70	54	6	4	4.2	1.2	5.4	3570	2570
	9	76	57	7	5	4.6	1.6	5.6	3250	2270
II(a)	10	74	64	8	5	5.8	2.4	6.4	2310	1550
	11	96	78	12	8	6.2	2.8	8.0	1450	1000
	12	94	82	8	5	7.2	2.8	8.4	1420	970
	13	89	79	7	5	5.4	2.4	8.8	1350	890
II(b)	14	85	77	6	4	6.2	2.9	7.9	1290	810
	15	85	73	8	5	6.7	3.1	7.9	1330	860
	16	84	69	9	6	6.2	2.2	7.8	1360	890
II(c)	17	95	79	11	7	5.0	2.0	8.3	1410	900
	18	90	72	13	9	5.4	2.1	8.8	1350	920
	19	83	72	7	5	4.8	1.8	8.0	1370	840
II(d)	20	84	69	8	5	5.5.	2.0	9.2	1400	920
	21	94	74	12	8	5.9	2.1	8.4	1380	950
	22	87	71	9	6	6.0	2.2	8.5	1340	910
II(e)	23	94	73	12	8	6.4	2.3	7.2	1370	880
	24	88	74	9	6	5.3	2.3	8.6	1420	850
	25	86	75	7	5	5.2	2.2	8.3	1280	900

Conventional SBR										
Phase	Period	TCOD	SCOD	TSS	VSS	TKN	NH_4-N	NO_3-N	MLSS	MLVSS
I	1	94	80	9	6	8.3	4.7	10.0	3550	2480
	2	95	82	11	7	7.8	4.6	9.9	3650	2445.5
	3	88	78	7	5	8.6	4.8	9.9	3620	2470
	4	90	79	6	4	8.3	5.3	9.6	3550	2670
	5	95	77	9	6	9.0	5.3	9.9	3670	2610
	6	84	78	7	5	8.7	5.2	10.1	3480	2540
	7	91	76	10	7	9.1	5.8	10.0	3890	2740
	8	90	78	8	5	9.3	6.1	9.6	3720	2610
	9	85	76	6	4	8.5	4.7	9.4	3450	2450
II(a)	10	102	87	9	6	10.8	7.3	8.0	2200	1350
	11	125	103	12	8	20.2	16.7	4.4	1520	990
	12	127	107	11	7	22.5	18.7	4.5	1550	1020
	13	123	109	7	5	23.8	20.2	4.3	1480	960

Fig. 8E

Period	pH	TCOD	SCOD	TSS	VSS	TKN	NH_4-N	TP	PO_4-P	TCOD:TKN
1	6.84	478	258	220	181	39	25	11.1	7.8	12.3
2	6.80	454	239	223	174	42	27	11.6	8.2	10.8
3	7.35	465	246	219	171	40	26	10.9	8.5	11.6
4	7.76	442	203	232	185	38	28	10.7	8.3	11.6
5	7.70	435	219	231	196	37	26	11.5	6.7	11.8
6	6.94	432	233	243	208	39	24	10.0	7.6	11.1
7	7.20	452	219	256	217	43	29	10.8	7.2	10.5
8	7.08	434	211	232	182	37	23	10.7	6.9	11.7
9	7.05	446	189	228	194	42	25	11.4	7.7	10.6
10	7.05	442	225	213	174	43	26	9.7	7.1	10.3
11	7.15	467	289	194	152	42	27	10.2	7.9	11.1
12	7.11	482	242	231	195	45	28	10.5	7.6	10.7
13	7.30	487	219	237	188	44	29	10.2	7.4	11.1
14	7.45	481	237	267	208	46	31	11.3	7.3	10.5
15	7.15	432	244	256	212	41	37	11.0	6.9	10.5
16	7.28	478	247	273	195	39	25	11.3	8.0	12.3
17	7.34	425	235	245	202	36	31	9.7	7.5	11.8
18	7.32	454	232	276	216	44	25	10.3	7.6	10.3

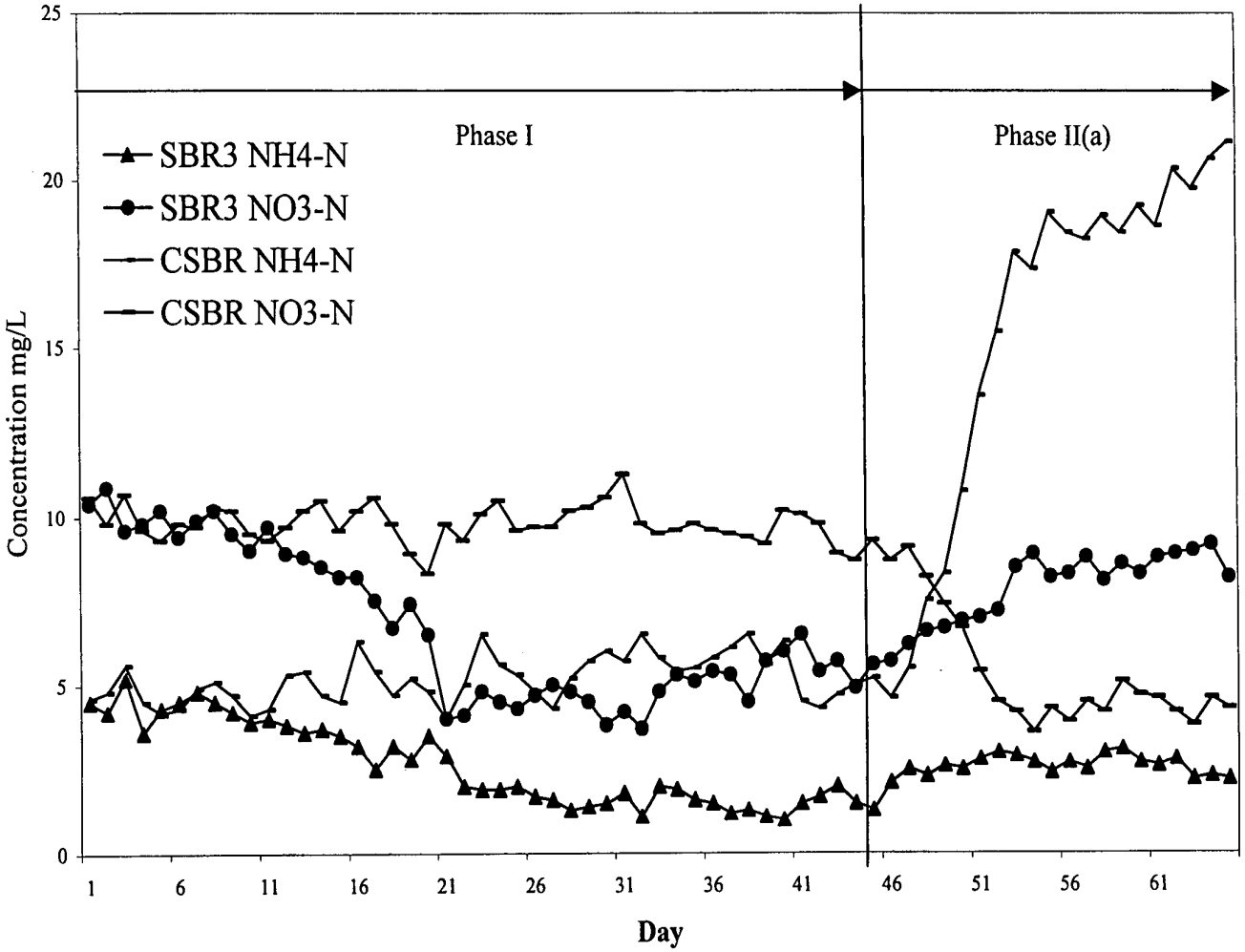
Fig. 8F

SBR3												
Phase	Period	TCOD	SCOD	TSS	VSS	TKN	NH_4-N	NO_3-N	PO_4-P	TP	MLSS	MLVSS
I	1	69	48	17	10	3.6	1.6	4.7	7.0	7.7	3575	2400
	2	67	47	19	13	2.1	1.3	5.2	6.3	7.2	3450	2450
	3	61	43	18	12	2.3	0.6	4.8	6.0	6.5	3360	2350
	4	54	37	21	14	1.5	0.6	4.4	5.9	6.9	3440	2440
	5	46	32	20	15	1.9	1.1	4.2	5.8	6.7	3350	2510
	6	42	30	15	11	1.6	0.8	4.0	5.6	6.4	3380	2480
II	7	45	32	14	10	2.3	1.5	4.6	5.5	6.3	2530	1780
	8	51	36	16	11	3.6	2.0	5.4	5.0	6.0	1800	1290
	9	57	38	21	17	3.0	1.6	5.6	4.5	5.2	1840	1270
III(a)	10	54	36	17	11	3.2	1.6	5.0	4.4	5.3	1810	1350
	11	52	38	19	12	3.5	2.0	5.6	2.8	3.7	1750	1300
	12	46	32	16	12	3.4	1.8	5.8	1.6	2.4	1820	1370
	13	53	38	19	13	3.1	1.5	3.4	1.0	2.0	1850	1390
III(b)	14	54	37	19	12	3.2	1.8	5.7	1.7	2.4	1890	1280
	15	53	36	22	15	3.4	2.1	5.7	1.8	2.3	1830	1360
III(c)	16	50	35	21	14	3.6	2.2	5.0	1.8	2.5	1660	1200
III(d)	17	56	39	13	12	3.5	2.0	4.9	1.6	2.9	1810	1300
III(e)	18	49	33	21	14	3.7	2.1	5.4	1.8	2.8	1750	1320

Fig. 8G

Conventional SBR												
Phase	Period	TCOD	SCOD	TSS	VSS	TKN	NH_4-N	NO_3-N	PO_4-P	TP	MLSS	MLVSS
I	1	87	64	16	12	3.8	1.7	5.0	6.7	7.5	3530	2450
	2	91	66	18	14	4.0	1.6	5.5	6.6	7.6	3510	2440
	3	90	67	17	11	4.2	1.5	5.8	5.5	6.3	3400	2670
	4	97	65	20	13	3.9	1.5	5.4	5.1	6.2	3350	2340
	5	95	61	21	16	4.2	1.7	5.5	5.7	6.7	3540	2670
	6	80	60	16	10	4.0	1.7	5.5	5.5	6.5	3490	2640
II	7	79	61	13	9	11.5	8.8	3.7	5.7	6.1	2470	1750
	8	90	65	17	13	23.5	21.1	1.3	3.4	4.5	1720	1210
	9	92	62	20	15	25.9	23.5	0.8	2.6	3.7	1780	1310
III(a)	10	84	61	16	9	24.9	23.5	1.3	1.9	3.0	1750	1350
	11	89	63	17	15	25.2	22.5	4.4	1.6	3.1	1820	1290
	12	93	65	18	13	24.1	21.3	4.5	1.8	3.2	1750	1310
	13	87	59	18	12	24.2	20.8	3.1	1.1	2.9	1780	1360

Fig. 8H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Phase II(a)
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SBR3 NO3-N
CSBR NH4-N
CSBR NO3-N
Concentration mg/L
Day
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5
10
15
20
25
1
6
11
16
21
26
31
36
41
46
51
56
61

Fig. 8I

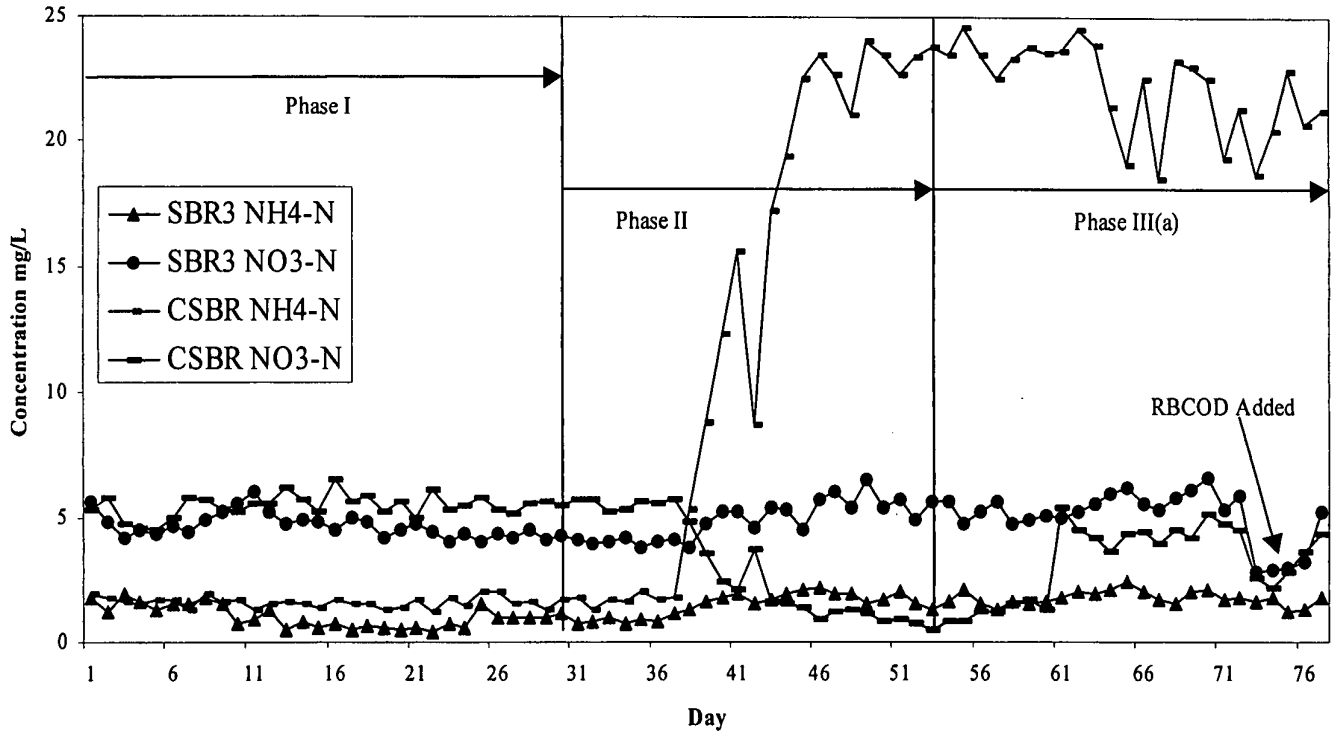
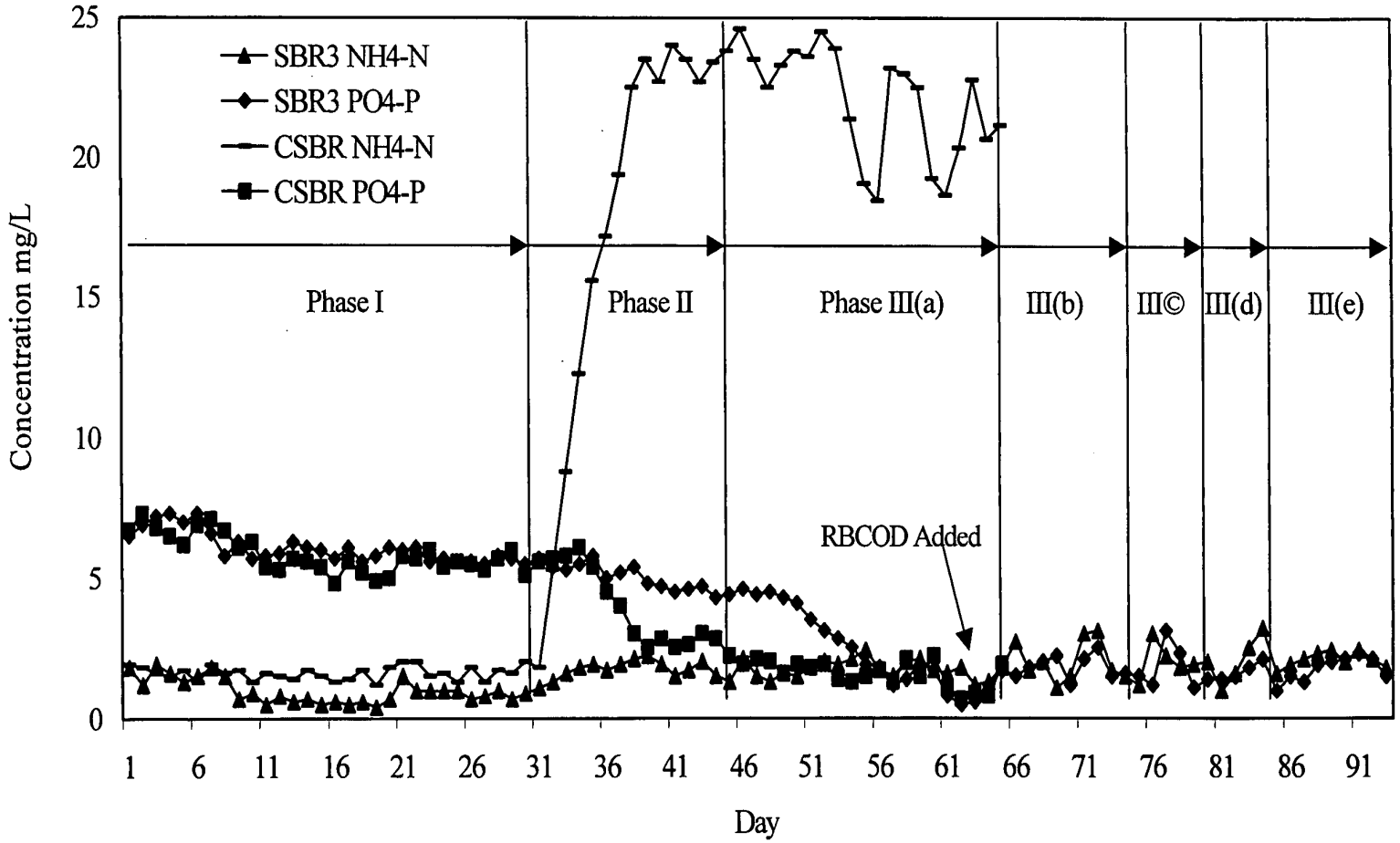

Phase I
Phase II
Phase III(a)
SBR3 NH4-N
SBR3 NO3-N
CSBR NH4-N
CSBR NO3-N
RBCOD Added
Concentration mg/L
Day
0
5
10
15
20
25
1
6
11
16
21
26
31
36
41
46
51
56
61
66
71
76

Fig. 8J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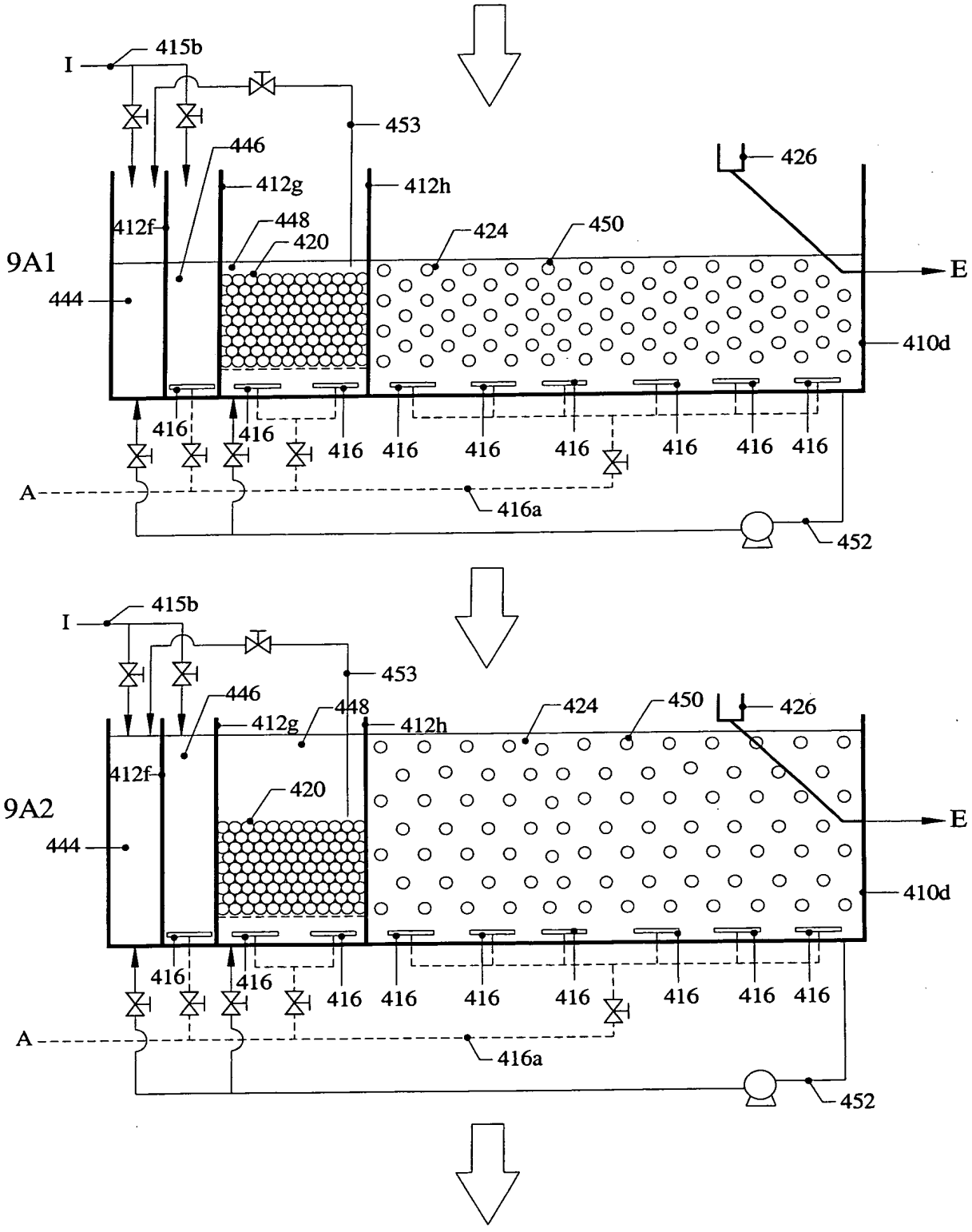
SBR3 PO4-P
CSBR NH4-N
CSBR PO4-P
Concentration mg/L
25
20
15
10
5
0
Phase I
Phase II
Phase III(a)
III(b)
III©
III(d)
III(e)
RBCOD Added
1
6
11
16
21
26
31
36
41
46
51
56
61
66
71
76
81
86
91
Day

Fig. 8K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412g
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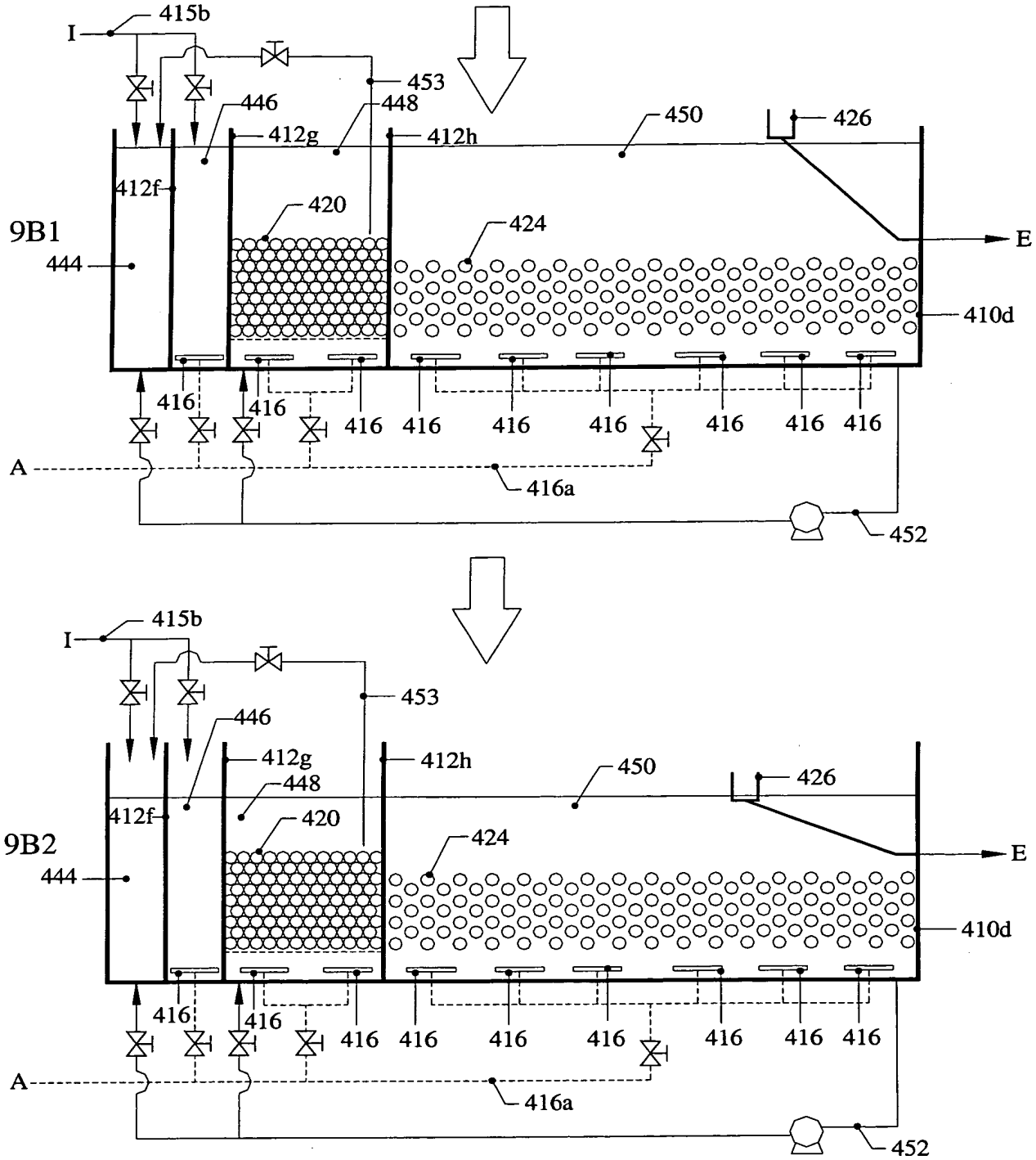
A
416a
452
9A2

Fig. 9A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415b
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448
412g
412h
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412f
420
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444
E
410d
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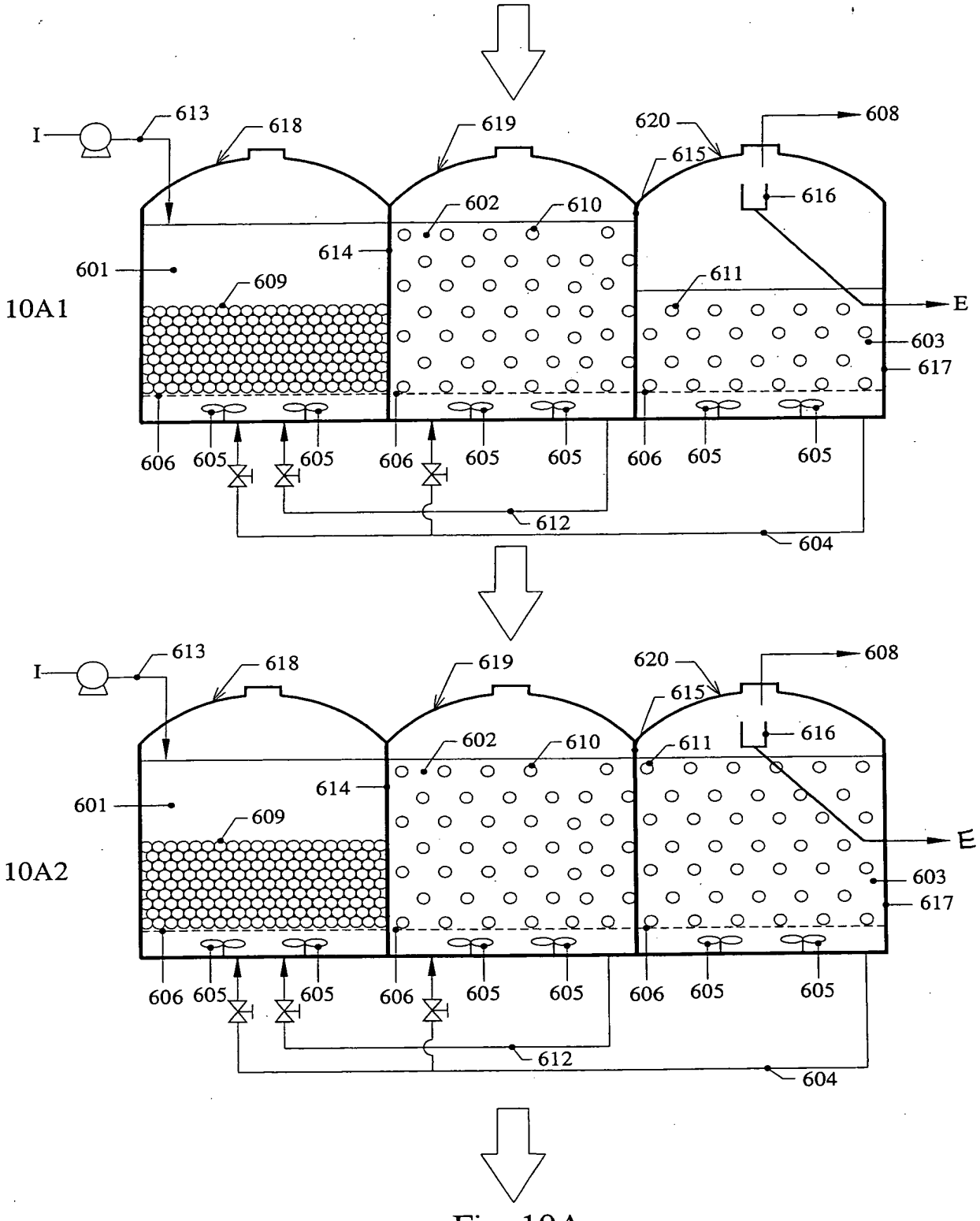
A
416a
452
9B2

Fig. 9B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10A2
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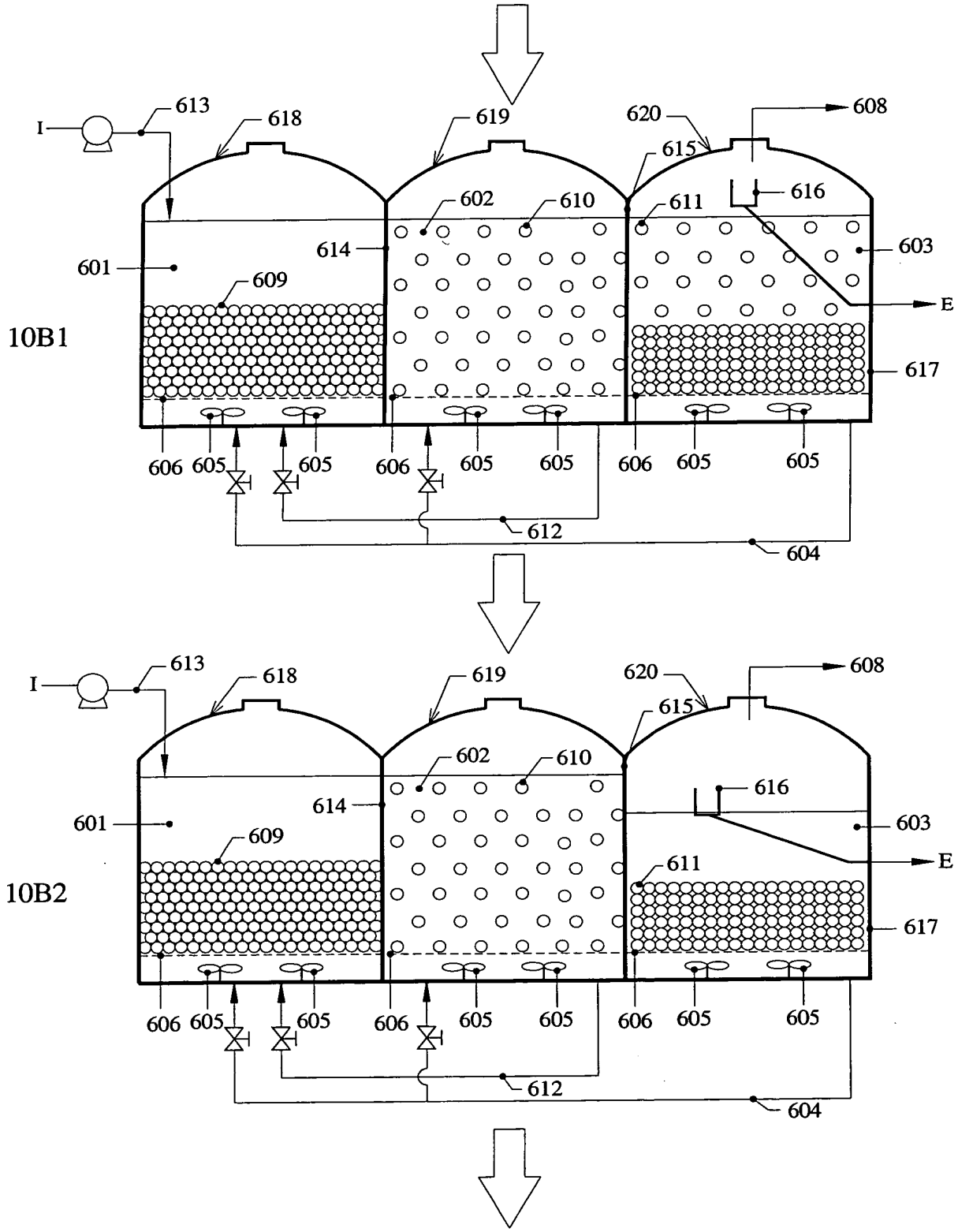
617
606
605
612
604

Fig. 10A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E
617
606
605
612
604

Fig. 10B